Beyond California: deposit laws in the evolution of recycling

An analysis
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Go back a quarter-century. Paisley is popular. Richard Nixon resides on Pennsylvania Avenue. The fledgling Environmental Protection Agency demonstrates the nation's growing concern about pollution and the environment. And out west, a new law will transform the face of recycling.

Oregon's landmark 1971 law established the United States' first comprehensive deposit-refund system for beverage containers.

Vermont soon followed. Over the next two decades, legislators introduced hundreds of "bottle bills" across the country, eventually succeeding in eight more states and one municipality. In 1986, our state became the tenth and most recent to enact a deposit-refund law, though California's program diverges markedly from "traditional" systems.

Now fast-forward to the present day. Recycling is no longer the province of a few dedicated conservationists; more than 7,000 U.S. communities now boast curbside collection programs. Integrated waste management has supplanted the long-standing tradition of simply burying trash. Canada, Europe and other nations experiment with aggressive manufacturer-responsibility systems for packaging. Beverage container recycling has evolved from a litter reduction tool to part of a broad strategy to conserve energy and natural resources.

Yet the mechanics of resource recovery shift continuously with new materials, new markets and new technology. Critics question the efficiency and underlying assumptions of recycling programs. A widely reprinted article in the *New York Times Magazine* even asserted recycling may be "America's most wasteful activity" (Tierney 1996).

So how do bottle bills fit in? Proponents seek to expand deposit systems, both to new jurisdictions and to new container types. Critics decry deposit laws as expensive, inefficient and counterproductive. Oregon is once again in the spotlight, with recent proposals to overhaul its beverage container recycling system. And in California, policy makers are reviewing our unique program from top to bottom.

Against this backdrop, we review below some themes surrounding deposit-refund systems for beverage containers. How do systems operate outside California? What issues confront other states? What trends shape other programs?

How did we get here?

The beverage industry changed dramatically in the last half-century. Voluntary deposits used to be the norm for carbonated beverages in

refillable glass bottles. As late as 1960, deposit-carrying refillables commanded a 95-percent U.S. market share for soft drinks and 53 percent for packaged beer (Franklin et al 1996). But centralization in the beverage industry and packaging innovations like the aluminum can and polyethylene terephthalate (PET) bottle changed all that. Refillables gave way to "no-deposit, no-return" bottles and cans in the 1960s. Today, non-refillable (one-way) containers hold nearly all soft drinks and beer sold in the U.S.

How much deposit?

The revolution in beverage packaging had consequences. Rising litter along roads and other public places prompted anti-litter campaigns and statutes. It also sparked calls to revive beverage container deposit systems, but this time as mandates. Thus the nation's first bottle bills focused heavily on the fight against litter, though conservation concerns also played a significant role.

In the 15 years between the passage of deposit laws in Oregon and California, litter remained a central theme, but waste diversion from landfills became an important goal as well. Proponents also cite energy and resource conservation to justify bottle bills, perhaps more so today as recycling programs combine with broader pollution prevention strategies to address complex environmental issues.

Which containers?

How U.S. bottle bills work

Thus the bottle bills in place today have several purposes at their core. To date, 10 U.S. states and one municipality have enacted mandatory deposits on beverage containers: California; Connecticut; Delaware; Iowa; Maine; Massachusetts; Michigan; New York; Oregon; Vermont; and Columbia, Missouri. California differs in several important respects from other states.

Which beverages? The focus of deposit laws in the U.S. has been almost exclusively on carbonated beverages – primarily beer and soft drinks. Some states (including California) address mineral water and wine coolers; all exempt dairy products. Iowa and Vermont cover liquor. Michigan includes canned cocktails. Maine mandates the broadest range of beverages, including tea, most fruit juices, wine, liquor and non carbonated water.

Which materials? Aluminum, glass and PET contain the vast majority of beverages covered by bottle bills. (Only Delaware exempts aluminum cans from deposits.) Glass has declined in market share over the years while aluminum and PET have risen. Aluminum cans commanded 60 percent of national soft drink containers sold and a third of the beer market in 1995, according to *Beverage World*. PET sales, although a smaller percentage of all carbonated beverage containers, are rising dramatically, as much as 22 percent in some categories in recent years (Dawson 1996a), and the market share for soft drinks rivals that of aluminum when measured by packaged volume (Dawson 1996b). Steel or bimetal cans (steel cans with aluminum lids) constitute a minor portion of carbonated beverage containers, though their market share is greater for fruit juices. Under the definitions of "beverage" in the deposit statutes, alternative materials like high density polyethylene (HDPE), paperboard cartons and aseptic drink boxes (a combination of aluminum, paper and plastic) usually fall outside the reach of deposit systems.

How much deposit? A 5-cent deposit is the norm for most beverage containers in deposit states. (While technically not a deposit, California's 2.5-cent refund value for containers under 24 ounces represents the lowest charge of any state.) Vermont and Maine also charge 15 cents for wine and/or liquor bottles. Michigan charges 10 cents for one-way beverage containers but only 5 cents for refillables; Oregon also encourages refilling by charging a lesser deposit (2 cents compared to 5 cents for non refillables).

Where redeemed?

Where do consumers redeem containers? In traditional bottle bill states, consumers return "empties" directly to retail stores, and bottlers and distributors collect from stores for recycling. Several states also allow consumers to return containers to redemption centers. Bottlers and distributors may hire third-party services to collect containers for them (Ackerman et al 1995). In contrast, California eliminated the need for retailers to accept and store empty containers by creating a system of "convenience zones," where independent recyclers pay consumers redemption value at state-certified centers.

Who handles the money? In other bottle bill states, deposits generally flow from consumers to the place of purchase (retailer) or to redemption centers, to the beverage

manufacturer or distributor, and back again when consumers redeem their empties. Funds and program operation largely remain in private hands, though beverage companies may report sales and returns to state government (and pay unclaimed deposits into state coffers in Massachusetts and Michigan). In contrast, California beverage manufacturers and distributors pay into the central, state-administered Beverage Container Recycling Fund. After consumers redeem their containers, the Department reimburses recyclers and processors from the fund.

Who gets money?

What happens to unredeemed deposits? In most deposit-law states, beverage distributors may keep funds leftover when consumers do *not* return containers for recycling. Massachusetts and Michigan have escheat provisions, whereby unclaimed deposits revert to the state. The resulting Clean Environment Fund in Massachusetts now pays for such things as municipal recycling programs and hazardous waste cleanup; more than $107 million reverted to the state between January 1990 and June 1996. Seventy-five percent of unclaimed deposits in Michigan go into a state trust fund for 10 years (with an estimated yearly accumulation of $34 million), to pay for solid waste programs and hazardous waste cleanup (Franklin et al 1996). California, once again unique among bottle bill states, uses unclaimed deposits to fund administration of the program, grants for nonprofit groups and special projects, and certain payments to processors, curbside programs and other recyclers.

Are there special fees for handling containers? Most states require beverage manufacturers and distributors to pay retailers and redemption centers a "handling fee" from 1.5 cents to 3 cents per container to offset the costs of redeeming, sorting and storing empty containers. This is additional to the amount of deposit, which the retailer passes back to consumers. In Michigan, the remaining leftover deposits (25 percent of the total) help retailers recover handling costs. Only Oregon has no handling fees.

Once again, California is different. Retailers do not receive handling fees from distributors. Instead, the Department of Conservation pays handling fees of 1.7 cents per eligible container to qualifying recycling centers in supermarket parking lots, to a maximum of $2,000 per month. Beverage manufacturers selling in California also may pay "processing fees" to the Department if the scrap value of a container falls below the cost of recycling; the Department then pays out "processing payments" to certain processors and recyclers to help offset recycling costs.

What happens to containers collected in curbside programs? Curbside operators in bottle bill states generally may redeem containers, but only after sorting by brand, as each beverage manufacturer pays deposits and handling fees based on the number of its containers returned. The additional sorting costs have prompted most curbside programs to forgo deposit redemption, except in Michigan, where the deposit is 10 cents (CRI 1992). This contrasts with our system, in which collection programs need only sort recyclables by material type. The Department pays California Refund Value (CRV) based on the average proportion of CRV to non-CRV containers in these "commingled" loads, determined through periodic sampling.

How many containers come back? Although methods of calculation vary, overall beverage container recycling rates in the 10 deposit-law states range from around 80 to 95 percent. This compares to 40 to 60 percent recovery of containers in "well-run" non-deposit programs (Ackerman 1997). Michigan and Maine reported the highest overall rates of return (98 percent and 96 percent, respectively) in recent years. Californians returned 76 percent of beverage containers sold in 1996; in the five years prior to 1996, Californians returned an average of 81 percent of all containers sold.

Calculating precise redemption rates for beverage containers in traditional bottle bill states can be difficult. Many of the data on sales and returns are proprietary, in the hands of beverage distributors. Some states, like New York and Massachusetts, require specific reports to state government; most do not. Thus, most bottle bill recycling rates are estimates based on surveys of bottlers and distributors (Shireman et al 1993). California data are more comprehensive and verifiable, as our state requires distributors to report sales and redemptions in order to allocate payments from the state's central fund.

How many come back?

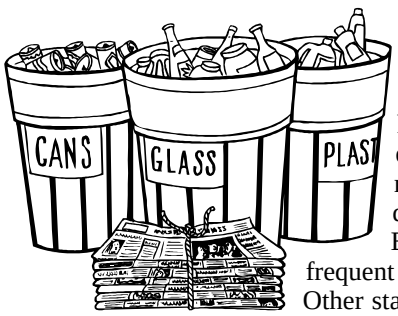
The reported recycling rate for separate market segments can vary widely. For instance, New York

Basic bottle bill questions

reported a 49 percent rate for wine coolers in 1994-95 but 82 percent for beer containers. Maine residents brought back 97 percent of their beer and soft drink containers but 83 percent of their wine bottles in 1993. In our state, the Department's data show 59 percent of PET bottles (mostly soft drinks) coming back in 1996, compared to 80 percent of aluminum cans (CA DOC 1996).

U.S. Developments

The issues surrounding bottle bills in this country in a sense focus more narrowly than other nations. No state has mandated a comprehensive producer-responsibility program like those sweeping Europe and elsewhere. Refillable bottles, common in Canada and Europe, have dwindled to an insignificant market share in the U.S., though bottle bill states generally show higher rates of refill than other states (Franklin et al 1996). Recycling policies have been forged more often at the state and municipal level than through national consensus.



But though our collective context may differ from other nations, Americans have 25 years experience with mandated beverage deposit programs. Bottle bill states face frequent attempts at change. Other states debate adopting a deposit system.

How do bottle bills affect other recycling programs?

Costs. How much do bottle bills cost? The question has been asked since the first deposit laws, and various researchers have conducted cost studies over the years. The beverage industry has long argued that mandatory deposit programs are expensive solutions to a minor part of the waste stream, driving up costs to consumers and society. Bottle bill advocates dispute industry figures and assert that deposit programs compel manufacturers to "internalize" the costs of waste management instead of passing them on to taxpayers.

A controversial 1995 study (Ackerman et al) illustrates an essential point: assessing the "true" cost of deposit laws is fraught with complexity, requiring numerous assumptions and reliance on incomplete information. The U.S. Environmental Protection Agency commissioned the Tellus Institute to compare state deposit laws, resulting in a draft document called *Preliminary Analysis: The Costs and Benefits of Bottle Bills.* Relying on previously published data, the Tellus researchers attempted to catalog both internal and external costs, including the costs to society of controlling pollution and litter. For comparison, they assumed 5-cent deposits, an 85-percent redemption rate, and bottlers keeping unclaimed deposits.

For traditional bottle bills, Tellus estimated costs to retailers and bottlers of 2.9 cents per redeemed container (or $12.06 per capita per year). Allowing for efficiency gains since the original data were collected (in the 1980s), the authors estimated a "high-efficiency" cost of 1.9 cents per container ($7.90 per capita). To these costs they added payments to local recycling collection programs and the cost to consumers of the 15 percent of deposits not claimed. Next the authors calculated the fiscal benefits of reduced litter and avoided manufacturing emissions attributed to bottle bills' higher recycling rates.

The bottom line: the Tellus analysis pegs the net yearly impacts of traditional bottle bills at $12.43 per capita, or $8.27 with assumed efficiencies. However, the report contrasts other states with California. Because our system eliminates some of the sorting costs in the traditional return-to-retail system, and allows local programs to collect refunds on commingled containers, Tellus estimated a California-style program (with some adjustments) produces a net benefit of $1.71 per capita.

Groups on both sides of the bottle bill fence challenged the researchers' methods and assumptions in formal comments to the EPA. Some claimed Tellus' estimates should have included the costs of benefits for supermarket employees, the inconvenience costs for apartment dwellers, the effect of deposit laws on container markets, and other considerations. Others claimed additional benefits should have been included, such as reductions in global warming and additional employment created by deposit systems. Several observers suggested Tellus oversimplified California's system. Many criticized the extrapolations from old or inadequate data (US EPA 1995).

The Tellus review remains a draft only; the EPA did not adopt its conclusions. Program costs undoubtedly will continue to fuel debate in bottle bill states and in new recycling proposals around the country.

Effects on local recycling programs. The cost claims inevitably spill into debate over bottle bills' compatibility with other recycling programs. As curbside collection mushroomed in the 1990s, critics argued deposit laws undermine municipal programs by robbing them of valuable revenue from the sale of beverage container materials. A 1991 study sponsored by the National Soft Drink Association compared recycling in two communities, one in

a deposit state (New York) and one in a non-deposit state (Maryland). The authors concluded deposit legislation significantly reduces revenues for local programs; comprehensive curbside collection "can easily offset 12 percent of its operating cost from the sale of beverage containers alone." They calculated the net cost to operate a curbside program under a deposit law at $145 per ton, but only $117 per ton without deposits (Bullock et al 1991).

In contrast, a 1993 report to Congress by the Congressional Research Service concluded deposit systems and curbside recycling are compatible. It acknowledged deposit-law materials cost more per ton to handle, but argued these costs are internalized in beverage prices, unlike tax-funded curbside programs. It described higher recycling rates and reduced contamination under deposit systems. According to the author, while "deposit systems 'skim' potential sources of revenue from curbside programs... They also reduce operating costs of curbside collection and processing. Studies suggest that local governments would achieve a greater diversion of solid waste from disposal at a lower cost per ton if both a bottle bill and a curbside collection program were in place." (McCarthy 1993).

The 1995 Tellus study also tackled the compatibility question. Frank Ackerman, principal Tellus researcher, describes his team's approach in the recently published book *Why Do We Recycle?*

> A community recycling program is likely to lose money when a bottle bill is introduced since most of the aluminum cans and other beverage containers would then be redeemed for deposits rather than set out for the recycling truck. But the community's garbage collection and disposal costs would also be reduced... Could the garbage disposal savings equal or outweigh the recycling losses? ...[W]e introduced the concept of the "break-even tipping fee." Holding everything else constant, we calculated the disposal cost per ton that would be required to make the disposal savings equal the recycling losses. (Ackerman 1997).

The researchers developed a computer model to estimate the break-even fee levels in several bottle bill scenarios. They first calculated a typical community would need a landfill tipping fee of $86 per ton for the avoided costs of disposal to equal bottle bill revenue losses; but if a local program could reduce collection due to the bottle bill, it might achieve a break-even tipping fee of $41 per ton, closer to the national average (Ackerman et al 1995). But if curbside programs could share deposit revenues without sorting by brand, as they do in California, Ackerman contends the compatibility question dissolves:

> If recycling programs receive 4 percent of all deposit containers, and can collect the 5-cent deposits on these containers through a California-style mechanism with minimal sorting costs, then the conflict between the bottle bill and curbside recycling vanishes. The deposits more than make up for the loss of other materials; the break-even tipping fee is zero or negative. (Ackerman 1997).

Whether Ackerman's analysis – or any other – holds true undoubtedly will remain controversial. What is true is many curbside programs in bottle bill states are surviving, if not thriving. "The recycling programs in [bottle bill] states never formed an addiction to the aluminum revenues, and so they don't miss them" claims one observer. "Nor do they miss the plastic, which is costly to collect." (Grassy 1992). A 1996 survey found curbside collection serves 59 percent of Americans in bottle bill states, on average, compared to 41 percent of residents in other states (Franklin et al 1996). In any case, the fiscal effects of a bottle bill on a given local program hinge on many factors, including the market strength of other recyclables, program financing methods, landfill tipping fees, collection efficiency and resident participation rates.

Unclaimed deposits. The fund that accumulates when consumers fail to redeem some containers can be an attractive revenue source. (Of course, the higher the recycling rate achieved by a deposit system, the smaller the fund.) The escheat laws in Massachusetts and Michigan support other waste management and environmental programs, some not directly related to beverage container recycling. Maine passed an escheat amendment in 1991, but it was repealed two years later as redemption of out-of-state containers threatened to undermine the fund. Iowa allocated $100,000 annually from unredeemed deposits to alcoholic treatment programs, but that feature was repealed in 1987 (Franklin 1996).

The beverage industry has challenged escheat laws as unconstitutional taking of private property. Massachusetts' law, effective in 1990, eventually wound up in the state Supreme Court, which upheld the statute. The amendment earmarked 70 percent of the resulting Clean Environment Fund for recycling and solid waste management and the remainder for other environmental programs. A recent state auditor's report, however, asserted nearly half the current funds go to hazardous waste cleanup (Walworth 1996).

Michigan's escheat provision withstood legal challenge as well. That state's Court of Appeals ruled in 1994

the deposit is a surcharge on the price of a beverage, property of the consumer until abandoned to the state. The state Supreme Court let the ruling stand, making the beverage industry liable for an estimated $150 million in back payments to the state (Hogan 1995b). A 1996 bill codified the state's 75 percent share of unredeemed deposits (Raymond 1996b).

Legislators in most other bottle bill states have attempted escheat amendments, albeit without success. In New York, previous Governor Mario Cuomo tried for nearly a decade to capture the estimated $80 million annual proceeds from abandoned deposits for recycling and conservation projects (Walsky 1994). Oregon's Governor John Kitzhaber has proposed transforming that state's strictly return-to-retail system to a state-administered program, with state government retaining unclaimed deposits (Green 1997). And the latest version of a national bottle bill would allow states to retain unclaimed refunds "to carry out pollution prevention and recycling programs" (U.S. Senate 1997).

Volatile markets continue to challenge deposit programs

Out-of-state redemption. The temptation for consumers to bring "foreign" containers into a bottle bill state to collect deposits can be a problem. Containers redeemed but not purchased in a deposit state create a negative cash flow, potentially undermining the solvency of a redemption system. Such transactions also can inflate the apparent recycling rate, since out-of-state containers would not have been counted as part of "total sales" for the rate calculation.

California has an aggressive enforcement program to protect the beverage container fund administered by the Department of Conservation (see *California Recycling Review*, Summer 1996). A national bottle bill would eliminate the problem of interstate redemption, proponents point out. But short of that controversial measure, traditional bottle bill states must rely on other means to guard against fraud. Maine, with the broadest range of covered containers, experienced problems after expanding its program to non-carbonated beverages in 1990. A 1995 legislative task force recommended changes later rejected by the beverage industry (Franklin et al 1996). A recent amendment, however, imposes a $100-per-container fine on persons who redeem containers not purchased in Maine.

The potential for fraudulent redemption increases with containers labeled for redemption states but distributed regionally. Consumers may purchase pre-labeled beverages in neighboring states, then cross state lines to collect refunds. Determining legitimate transactions becomes difficult for retailers or recycling centers.

Massachusetts limits redemptions to 10 cases per transaction to combat the problem. Attaching a refund label at the warehouse or retail store instead of the manufacturing plant is another solution for some beverages; Iowa reports about half the state's liquor containers are labeled at the warehouse. Iowa retailers can lose their liquor license for selling liquor without the proper markings. Colombia, Missouri (the only U.S. deposit-law municipality) has considered registering a trademark to help control fraudulent redemptions (Hogan 1995a).

Market development. Prices plummeted for many recyclables in 1996 after soaring in 1994-95. Beverage container materials were no exception. Prices for baled PET bottles swung especially dramatically, from a high of around 40 cents per pound in some areas to a few cents or even zero. "The PET scrap market is heading south faster than a bat out of hell," quipped one writer last fall (Apotheker 1996a).

The precipitous drop in demand for postconsumer PET occurred across the nation, in bottle bill states as well as others. But higher recovery rates in deposit states means a higher contribution per capita to the PET supply, and so the market changes are keenly felt. Historically, cleaner deposit-law scrap PET commanded a premium of several cents a pound over curbside-collected material, but even that evaporated for a period last year; it could not withstand the downward pressure from low-priced virgin PET flooding the market.

Some PET reclaimers stopped buying bottles in 1996. Manufacturers of strapping abandoned green postconsumer PET in favor of virgin, leading to stockpiling of the stuff by recyclers. And observers expect lots of green in 1997, as Coca-Cola introduces its Surge soft drink and sales of lemon-lime drinks surge forward; some regions, including deposit state Iowa, report 50 percent of PET sales in green (Apotheker 1997).

The disparity between supply and demand for scrap PET has revived calls for manufacturers to use more recycled content in their products. At least one state (Wisconsin) convened a task force to recommend solutions to PET problems. Some criticize manufacturers for not using

recycled content in their U.S. bottles; the two major companies use more than 750 million pounds of the material annually in this country, 50 percent of total PET bottle production (Apotheker 1996b).

And so markets remain a key issue in beverage container recycling quarters, both within and outside bottle bill states. A variety of measures are on the table, ranging from technical assistance to help manufacturers voluntarily use more postconsumer resin, to tax changes and minimum recycled-content mandates. For example, the Association of Postconsumer Plastic Recyclers has formed a marketing committee to encourage greater use of scrap resin and to promote recycled-content legislation (Apotheker 1996c). The committee is discussing outreach to new markets for recycled PET, such as sheeting, as well as increasing buy-recycled campaigns.

New containers, expansion proposals

Market factors underlie what is perhaps the biggest trend confronting bottle bill programs: new technology and products are transforming beverage packaging. Manufacturers are introducing beverages in blue glass and plastic bottles. The single-serve plastic soft drink bottle has become ubiquitous. Deposit beverages sometimes appear packed in plastic pouches surrounded by cardboard – the "bag in a box." A new resin, polyethylene naphthalate (PEN) , waits at the door, with far-reaching consequences for recycling (see *California Recycling Review*, Fall/Winter 1996).

Indeed, the shifting sea of beverage container materials lies beneath current calls to expand deposit systems to more beverages and more states. Advocates argue the explosion in new containers and new beverages – "New Age" drinks like spring water, teas and fruit beverages – newly burdens our resources and waste management systems. These non carbonated drinks fall outside the reach of most deposit laws. Wine and liquor bottles add to the total. The Container Recycling Institute claims that adding such containers to a traditional bottle bill could increase the tons of containers recycled by 80 percent (CRI 1996).

The soft drink industry and others contend expanding deposit laws only exacerbates a costly, inefficient method of waste management. They argue for "comprehensive" recycling that targets much more of the waste stream:

> Soft drink containers have a high scrap value – and the revenue generated from the sale of beverage container scrap helps offset the cost of collection and recycling of materials that are not quite as valuable. By requiring consumers to comply with a separate collection system for beverage containers, forced deposit laws remove these valuable containers from inclusion in curbside programs... The result: a more costly curbside program. (NSDA 1996)

Commenting on proposed national legislation, a soft drink spokesperson recently asserted deposit-law systems cost $600 per ton to recycle beverage containers, compared to about $100 a ton in curbside programs (Greczyn 1997).

But proponents in some bottle bill states are moving ahead with expansion plans. A bill in Massachusetts would add containers to its deposit law. The Michigan United Conservation Clubs are spearheading a drive to expand their state's program. A pending bill would add water bottles in Vermont. Californians Against Waste is sponsoring a bill here (AB 1512) that would extend the bottle bill to sports drinks, juice, tea and water.

Oregon advocates put bottle bill expansion on the ballot last November, but the measure went down 60 percent to 40 percent. Nevertheless, the battle continued in the birthplace of the bottle bill. Governor Kitzhaber sponsored House Bill 2346, which would revise the definition of beverage to include non-carbonated water, fruit drinks and coffee and tea drinks. It would also install a California-style system of redemption centers. Distributors would pay refund value plus a 1.5-cent handling fee for each container to the Department of Revenue, which, in turn, would reimburse processors who purchase containers from redemption centers or retailers.

New containers, changing markets confront redemption systems

In addition, House Bill 2208 would impose a 4.5-cent beverage tax to fund a "nickels for nature" program. Redemption center funding, including the proposed handling fee, would come from the tax. The remainder would raise $30 million annually for parks, stream restoration and salmon recovery (Green 1997).

Uncharted territory

Bottle bill campaigns are underway in new states as well. Groups in Tennessee and Puerto Rico are pushing for container mandates. Deposits are under consideration in Georgia; the Atlanta *Journal/ Constitution* supported the idea in an editorial last December. And in Congress last January, Republican Senator James Jeffords of Vermont introduced S. 215, the *National Beverage Container Reuse and Recycling Act of 1997*. The bill would create a national deposit program, imposing a 10-cent deposit in states with recovery rates below 70 percent for soft drinks, beer and other carbonated drinks.

As we reconsider beverage container recycling in California, there are challenges we share with other programs – and many differences, to be sure. But the experiences beyond California offer a laboratory of sorts. The traditional U.S. bottle bill has come full circle, back to its birth, at our doorstep. We can benefit from lessons learned in Oregon and elsewhere as recycling systems evolve.

Perhaps as you read this you are drinking tropical tea from an amber bottle shaped like a pineapple. Markets will change, as markets do. By the time you sip your tea, some bottle bill proposals will have advanced, some will have died. Few will escape spirited debate.

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Beyond the United States

The 10 state bottle bills affect about 30 percent of the U.S. population (McCarthy 1993). But to the north, nearly all Canadians live in deposit-law jurisdictions. Almost every province has a deposit/ refund system for beverage containers, with deposits ranging from 5 to 80 Canadian cents. Several provinces require deposits on all containers except milk. Consumers return their empties to retailers, or to independent "depots" (redemption centers) in some provinces.

The Canadian deposit laws operate in a very different context than U.S. bottle bills. Canada's National Packaging Protocol calls for a 50 percent reduction in packaging disposal by the year 2000 through government and industry partnerships. The provincial governments and various industries have been developing "shared responsibility" plans, where consumers, industry and government share stewardship of packaging, including the costs of reuse, recycling and disposal.

Brewers operate a separate, voluntary deposit system for domestic beer in refillable bottles in all provinces. Prince Edward Island has banned non refillable beer and soft drink containers altogether. Several provinces promote refilling through "half-back" deposits, refunding deposits in full for refillable containers but only half for non refillables. In New Brunswick, the government's portion of the held-back deposits (about $4 million a year) go into the Environmental Trust Fund to pay for various projects.

Some provinces have begun to implement shared stewardship, with beverage container recycling systems as the catalyst for broader goals. Manitoba now taxes each container two cents to help fund multi material collection in the province (CSDA 1997).

British Columbia recently expanded its program to include non carbonated beverages and will phase out retail-based redemption in favor of independently operated depots. Soft drink companies there fund a consortium called Encorp Pacific to collect materials from the depots, paying depot operators handling fees of 2.2 to 3 cents per container.

Alberta's system is centralized, which eliminates some of the sorting required in other provinces (Shireman et al 1993). The provincial government registers depots for non refillables according to population density and other guidelines. The industry-funded Alberta Beverage Container Recycling Corporation collects from depots and markets the materials, reimbursing depot operators for deposits and handling costs from a central fund. An industry management board in formation would have delegated authority from the government to administer the program (Spiegelman 1996).

Deposits and green dots

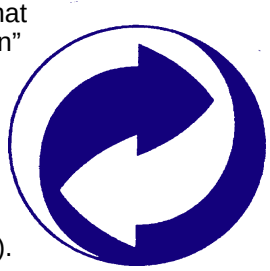
While Canadians decide how to share recycling responsibilities between the public and private sectors, Europeans and others have gone a step further. Beverage container deposits, environmental taxes and other mechanisms comprise broad "extended producer responsibility" (EPR) systems for products and packaging. Germany led the way in 1991 with its "take-back" legislation for packaging. Manufacturers literally must take back the packaging for their products or fund a recycling program separate from municipal waste disposal. Industry responded by creating the Duales System Deutschland (DSD), a private recycling venture funded through license fees manufacturers pay when

they display the DSD's green-dot emblem.

Beverage container deposits enter the picture in the German system if a statutory quota is not met: 72 percent of sales must be in refillable containers, or manufacturers face deposits of about 30 to 60 cents per container (CRI 1994). Refilling, in fact, is the norm in most of the European Union countries, encouraged or mandated through deposit schemes, quotas and taxes on one-way containers. Denmark allows only refillable containers for beer and soft drinks. Refillable PET bottles carry a substantial market share in some countries, in addition to the traditional glass.

Most European nations have some sort of deposit/refund system for beverage containers, with deposit levels that are high by American standards; consumers typically pay the equivalent of 6 to 30 cents for smaller containers and up to 60 cents for large ones (CRI 1994). Europeans are still developing EPR schemes to comply with the European Union's 1994 Directive on Packaging and Packaging Waste.

Critics assert the take-back programs and other measures are costly and inefficient. Under a complicated process that requires "harmonization" of member states' laws, Germany's refillables quota has come under fire as a barrier to trade, as has the Danish "can ban" (Raymond 1996a). But beverage container deposits seem likely to remain as a strategy for governments seeking broader environmental goals. ■



Note: The full list of references cited in these articles is available from the Department of Conservation Recycling Resource Center by calling 1 800 RECYCLE (in California) or Jim Hill at (916) 327-8804.

Bottle bills: a brief bibliography

Note: The Department of Conservation Resource Center has many documents and articles examining the role of deposit systems in beverage container recycling. We list some of the more useful references below, from both supporters and critics of bottle bills. (Numbers in parentheses are Resource Center Call Numbers.)

Ackerman, Frank et al. 1995. *Preliminary analysis: the costs and benefits of bottle bills*. Draft report for United States Environmental Protection Agency. Boston: Tellus Institute.

Researchers evaluated existing data and developed a computer model to examine internal and external costs of bottle bills, including the costs of pollution control and litter abatement, and the impact of deposit laws on curbside collection programs. (Deposit 0038.)

Ackerman, Frank. 1997. *Why do we recycle? Markets, values and public policy*. Washington, D. C.: Island Press.

A comprehensive look at the economic, social and ethical reasons for recycling programs, with a chapter devoted to container deposit legislation. Ackerman, now with Tufts University, has been a principal researcher on recycling issues at the Tellus Institute. (Recycling 0221.)

Bohm, Peter. 1981. *Deposit-refund systems – theory and applications to environmental, conservation, and consumer policy*. Baltimore: Johns Hopkins University Press.

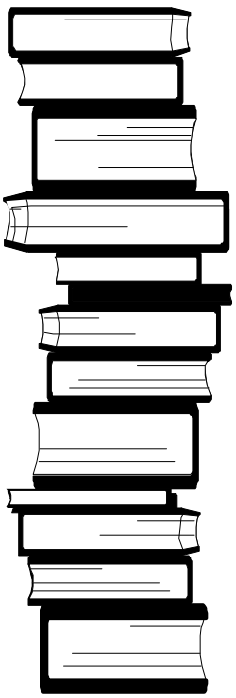
Examines the economic theory behind deposit systems, both market-generated and government-initiated, with discussion of their application beyond beverage containers. (Deposit 0035.)

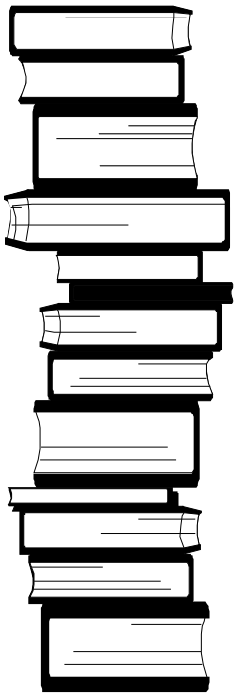
Bullock, Dave et al. 1991. *Impact of container deposits on curbside recycling: two case studies*. Washington, D. C.: National Soft Drink Association.

Compares the fiscal effects of deposit legislation on curbside programs in two cities, one in a state with a bottle bill and one without. (Curbside 0101.)

Container Recycling Institute. 1997. *The ten-cent incentive to recycle.* Washington, D. C.

Summarizes the arguments in favor of bottle bills, including recent efforts to expand laws to new containers. (Deposit 0046.)





Conti, Nina. 1993. *The California approach to beverage container recycling.* Sacramento: Planning and Conservation League Foundation.

Contrasts traditional bottle bills with California's system, suggesting the central fund in California lowers costs and could be applied to other states. (BCRLRA 0039.)

Franklin, Pat et al. 1996. *Beverage container deposit systems in the United States II.* Washington, D. C.: Container Recycling Institute.

Provides detailed data on the mechanics and recycling rates of each bottle bill in the United States. (Deposit 0045.)

Franklin, Pat (Ed.). *Container and Packaging Recycling Update.* Washington, D. C.: Container Recycling Institute.

A quarterly newsletter tracking trends, research and legislation relating to container deposits.

Grassy, John. 1992. "Bottle bills: headed for a collision at curbside?" *Garbage*, January/Feb.

Reviews what opponents and proponents of bottle bills claim to be the effects on curbside recycling, concluding we need to clarify our goals for recycling programs.

McCarthy, James. 1993. *Bottle bills and curbside recycling: are they compatible?* Report for Congress. Washington, D. C.: Congressional Research Service.

Reviews the available data on the effects of deposit laws on curbside collection, including amounts and quality of materials collected and net costs of operation.

National Soft Drink Association. 1989. *Forced deposit laws: there are no winners.* Washington, D. C.

Analyzes data on the impacts of deposit legislation on beverage prices, litter and waste management costs, arguing voluntary litter reduction and recycling programs are cheaper and more effective. (Deposit 0006.)

National Soft Drink Association. 1991. *Why comprehensive recycling is a solid winner. Why forced deposit laws are a solid waste.* Washington, D. C.

Summarizes arguments against deposit laws and argues for "comprehensive" recycling, including recovery from residential, commercial and industrial sources.

Raymond, Michele (Ed.). *State Recycling Laws Update.* Riverdale, MD: Raymond Communications, Inc.

A bimonthly newsletter focusing on legal and regulatory changes across the country, including developments in deposit programs.

Shireman, Bill et al. 1981. *Can and bottle bills.* Berkeley: California Public Interest Research Group and Stanford Environmental Law Society.

Detailed analysis of beverage industry structure and changes, legislative history of bottle bills then existing, environmental and fiscal impacts of containers, and alternative programs for litter reduction and recycling. (Deposit 0004.)

Shireman, Bill et al. 1993. *Beverage container redemption laws: a least-cost strategy for beverage container recycling.* Draft report. Sacramento: California Futures, Inc.

Identifies conditions for achieving 70- to 90-percent redemption rates for beverage containers at the lowest cost per container. Proposes a privately administered central deposit fund with government oversight. (BCRLRA 0204.)

Spiegelman, Helen. 1996. "The beverage industry's best kept secret." *Reiterate*, May.

Examines packaging stewardship in Canada with details on the beverage container deposit system in each province.

United States Public Interest Research Group and the National Environmental Law Center. 1992. *A deposit on our future: the economic and environmental benefits of the bottle bill.* Washington, D. C.

Summarizes arguments for a national bottle bill by two proponent organizations and reviews the experience of states with and without deposit laws. (Deposit 0041.)

Notes

Printed on recycled
paper with 20%
postconsumer content.

The Department of Conservation's **Recycling Resource Center** provides local government, industry, and the public with central access to information on all facets of beverage container recycling. The goals of the Resource Center are to help transfer recycling technology, to disseminate technical data to strengthen recycling markets, and to promote creative approaches to conserving California's resources. There are three parts to the Resource Center:

The recycling library. Library holdings include many books, reports, manuals, surveys, studies, encyclopedias and videotapes that you may borrow in person or by mail (see *How To Borrow Materials*). The library subscribes to most periodicals related to recycling. The library database currently contains over 17,000 entries, and new materials arrive daily. Library staff can assist you with computer searches of titles, subject areas, and authors. Hours are 9:00 a.m. to 4:00 p.m., Monday through Friday at 801 K Street MS 18-55, Sacramento, CA 95814, (916) 445-1490.

Look for the library database on the World Wide Web in coming months at **http://www.consrv.ca.gov**.

How To Borrow Materials

We loan most publications for one week. Present your request on your organization's letterhead or leave a business card if you visit the Center personally. (College students should provide a copy of their student ID.) Include the publication date or Resource Center Call Number in your request. The *Resource Center Guide* lists additional materials for loan. To order a copy, call 1 800 RECYCLE (then follow instructions to access the Resource Center voice mailbox) or write to the address above.

Publications. The Publications Unit distributes copies of Division of Recycling publications and other documents. There is no charge. For a list of available publications, order the *Resource Center Guide* by calling 1 800 RECYCLE (then follow instructions to access the Resource Center voice mailbox).

Toll-free telephone information. 1 800 RECYCLE is a toll-free automated information line (in California only) to answer questions about California's beverage container program and other recycling topics, such as grants and school programs. The service also provides technical program information for beverage manufacturers, distributors, dealers, and certified recyclers and processors. Callers with further questions may speak to an attendant.